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SENSITIVE
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TAGS: [EAGR](#) [EINV](#) [ECON](#) [IN](#)
SUBJECT: MAHARASHTRA SEED COMPANIES CLAIM THAT GM CROPS ARE
INCREASING FARMING YIELDS AND FOOD SECURITY

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Summary:

11. (U) Maharashtra-based seed companies told Congenoffs that Bt-cotton seeds are "beneficial" to farmers and "necessary" to raise the yield of cotton. They also stated that despite being more expensive, the use of Bt-cotton seeds results in considerable savings to the farmers due to reduced pesticide treatments. Admitting that the opposition to genetically modified (GM) food crops will be even greater than the present agitation against Bt-cotton, these seed companies are nonetheless pressing forward with their research into other types of genetically-modified technology that can be used across the spectrum of India's food crops. These Bt-boosters claim that with shrinking cultivable land acreage, growing environmental concern about the use of pesticides, and the increasing pressure of population and livestock on land, GM crops are the only answer to assure food security not only for India but also for the world. End Summary.

Bt-Cotton: The "Popular" Choice Despite the Higher Price

12. (U) *Bacillus thuringiensis* (Bt) cotton or genetically modified (GM) cotton refers to cotton seeds loaded with a gene which protects the cotton crop from the American bollworm. (Note: Historically, the American bollworm has been one of the most damaging cotton pests in India, reducing both cotton yield and quality. The Bt gene synthesizes proteins that kill the insect when it feeds on the cotton plant. End Note). India's regulatory body for biotech crops, the Genetic Engineering Approval Committee (GEAC), has approved five types of genetically engineered events (gene transfer technology) for Bt-cotton in India. The Maharashtra Hybrid Seed Company (MAHYCO) has commercialized two events sourced from U.S.-based Monsanto Chemical Co, Nath Biogene developed and commercialized a Bt-cotton event on gene technology sourced from China, J.K. Seeds has indigenously developed and commercialized an event for Bt-cotton and recently the Central Institute of Cotton Research indigenously developed a Bt event. The seed companies, in turn, charge a royalty and sub-license the Bt-gene technology to other seeds companies to introduce in their own cotton hybrids. Based on these five Bt events, around 279 independent Bt-cotton hybrids are currently manufactured and marketed in India, depending on geographical location.

13. (U) As compared to the introductory price of around USD 40 per 450 gram packet, Bt-cotton seeds now sell at USD 14-16 a packet due to the "price ceiling" imposed by several state governments. (Note: The Andhra Pradesh government mandated

that Bt-cotton seeds be sold at USD 16 per packet in 2006, and most other states followed suit. Other cotton-growing states in India are also demanding that Bt-cotton seeds be sold at these prices. End Note). F. Patil, Director (Technical) of Ajeet Seeds, noted that the upside of price regulation is that the incidence of spurious Bt-cotton seeds has declined. According to government statistics, less than 6 percent of the samples of Bt-cotton seeds tested in 2007-08 were spurious as compared to 69 percent of seeds tested in 2003-04 when Bt-cotton seeds were sold at USD 40 per packet.

14. (U) Even with price controls, Bt-cotton seeds are two to three times more expensive than non-Bt non-hybrid cotton seeds. Notwithstanding the higher price, Bt-cotton currently accounts for around 85 percent of the total acreage under cotton production. This is a clear indication of the farmer's "preference" for Bt-cotton, Patil argued. S.U. Baig, Technical Director of Nath Biogene, explained that the Bt gene in the cotton which protects against infestation by the American bollworm reduces the number of insecticide and pesticide treatments required to 5 sprayings vis-a-vis 15-20 treatments required to protect non-Bt cotton crops. Each pesticide treatment costs around USD 22 per hectare, so this technology saves the farmer around USD 222 per hectare, he claimed. Contrary to media reports that the high price of Bt-cotton forced farmers into debt and compelled them to commit suicide, Bt-cotton accounts for over 70 percent of the cotton grown in Vidharbha (the region in Maharashtra with the largest number of farmer suicides), he continued; if the farmers were not benefiting from GM seeds then why would purchase it when non-GM seeds can be purchased in the market at a cheaper price, he asked. Ajeet Seeds' Patil said that the belief that the Indian farmer is "price sensitive" is a misconception. He believes that the farmer is willing to "purchase a technology at any price once he is convinced about its potential."

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GM Crops Are a Key to Raising Productivity Yields

15. (U) Patil noted that India has just two percent of the world's land and receives just one percent of the total rainfall but has to support 16 percent of the world's population. Despite this, India achieved self-sufficiency in food grains mainly due to high yielding dwarf varieties of wheat introduced following the "Green Revolution." GM crops are now "required" to raise the agricultural productivity level in India to the world level, he argued. Cotton production and productivity has nearly doubled since the introduction of Bt-cotton in India in 2002. According to the Cotton Corporation of India, cotton production in India has increased from 15.8 million bales in 2001-02 (before Bt cotton was introduced in the market) to 31.5 million bales in 2007-08. During this period cotton acreage has not undergone a significant change; it increased to 9.5 million hectares in 2007-08 from 8.7 million hectares in 2001-02. But yields have nearly doubled from 308 kg per hectare in 2001-02 to 560 kg per hectare in 2007-08. This proves the efficacy and effectiveness of GM crops, Patil argued.

16. (U) However, Patil admitted that the yield of cotton in India is still lower than the world productivity level of 660 kg per hectare, even with Bt-cotton. Nevertheless, he noted that the yield for non-Bt crops is much lower than the world average; for rice and wheat it is 2.6 tons per hectare and 2.4 tons per hectare respectively, far below the world average of 8.8 tons per hectare for rice and 7.5 tons per hectare for wheat. In a separate discussion, Nath Biogene's Baig echoed Patil's views and pointed out that India and China -- the two countries most in need of GM crops to support their large population -- are the only two countries in the world to introduce Bt-cotton.

Other GM Crops in the Pipeline

17. (U) Most of the major seed companies in India are researching the commercialization of other GM crops like

eggplant, okra, cauliflower, tomato, cabbage, and paddy (rice). MAHYCO is expected to be the first Indian company to commercialize Bt- eggplant using Monsanto's gene technology to protect against the fruit and shoot borer which attacks the eggplant crop. Bt-eggplant, which is expected to be launched in 2009, will be the first genetically engineered food crop to be propagated and sold in India using GM seeds. Bharat Char, Biotechnology Research Lead of MAHYCO, explained that farmers spray eggplant with insecticides and pesticides 70-80 times during the six month growing period to prevent infestation by the fruit and shoot borer. Introducing the Bt gene to prevent infestation will reduce the number of pesticide sprayings and save the farmer an estimated USD 356 per hectare, he maintained. GM crops enable "economic threshold level-based spraying." Farmers need to spray GM crops only if pests grow beyond a certain level, he explained.

18. (U) Char noted that the Bt gene only addresses a single problem -- pest infestation in most cases -- and the gene has to therefore be combined with crop technology to address other problems like drought resistance, virus attacks and salinity tolerance. MAHYCO's research work encompasses all these issues, he said. For example, the company has tied up with Arcadia Biosciences of the U.S. to gain access to their technology which improves the nitrogenous efficiency of soil which will consequently reduce the fertilizer requirement of crops. The company is separately also working on technology to improve the phosphate uptake of crops. (Note: MAHYCO scientists explained that irrigation or excessive rainfall depletes the efficacy of fertilizers as the nitrogen in fertilizers is soluble in water and phosphate forms a dense mass so neither can be efficiently absorbed. Gene technology to address both of these issues will improve plant growth and productivity yield and also decrease the need for fertilizers, they continued. End Note). Ajeet Seeds' Patil believes that the current fertilizer crisis was because farmers realized that fertilizer was needed to exploit the true potential of BT-cotton. They, therefore, increased their demand for fertilizer and existing supply could not keep pace, creating a temporary shortage, he said. (Comment: In contrast to Patil's comments, FAS Delhi notes that cotton requires less fertilizer as compared to other crops. The fertilizer shortage in India was more due to the high price of urea and the government's poor distribution program than due to the increased demand by Bt-cotton farmers. End Comment).

19. (SBU) Nath Biogene's Baig admitted that anti-GM countries in Europe posed a threat to the pace of commercialization of edible

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GM crops in India. The EU has threatened to ban imports of rice if the government permits GM rice cultivation in India, he explained. Nevertheless, seed companies are researching Bt rice and will wait until the government approves commercialization and marketing. All interlocutors agreed that opposition to edible GM crops would be even greater than the present agitation against Bt-cotton. They contended that anti-GM opposition is "baseless" and is spearheaded by an "interested" party with deep pockets although they did not specify who that may be. Nevertheless, they emphasized that the Indian government has no choice but to approve the commercialization of GM food crops given India's low productivity yields, shrinking farm acreage and one billion-plus population to feed. Patil stressed that advocacy for GM seed technology should be through multiple agencies and cautioned multinational corporations against lobbying the Indian government by themselves to popularize this technology.

Comment:

10. (SBU) People are still divided and undecided about whether a "gene revolution" should follow the green revolution of the 1960's to ensure food security worldwide. While GM-boosters dismissed the opposition to GM crops based on the belief that the Indian government would act rationally, the experience in other countries indicates that anti-GM opposition may pose a

major hurdle. The EU is the second largest export market for Indian basmati rice and the Indian government is not likely to jeopardize its export revenues by ignoring anti-GM opposition. These seed companies, perhaps naively, have underestimated the ability of organized and dedicated NGOs to delay or derail projects that they oppose. Companies may regret not actively laying the groundwork for GM food acceptance, instead of waiting to see what happens. Nevertheless, there is one undisputed fact: yield productivity has to improve in the face of shrinking cultivable land and the increasing pressure of population and livestock on land. Crop biotechnology appears to be one solution to the need to improve farm yields in the face of these challenges. End Comment.
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